

# HY10000-WK09 Integrated Writer User's Manual



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# 1. Package Contents

HY10000-WK09 integrated writer is a tool for connecting PC to program the chips. As shown in Figure 1-1, HYCON HY16F/HY17P/HY17M series products can be programmed through the integrated writer, the related hardware is equipped as shown below:



Figure 1-1

No.	Model No.		Description	Quantity
	1.	HY10000-WK09	Integrated Writer	1
	2.	Cable line	USB Type A to Type B Cable	1
HY10000-WK09	3.	Programming line	6pin/2.5(2.5mm pitch)	1
	4.	Power Supply	Output: DC 5V	1



# 2. Safety Precautions

- Do not place heavy objects on the display panel, in order to avoid damage caused by stress.
- Place the application display boards at steady place, so as to avoid falling damage.
- Do not use this product with the input voltage which is not meeting the electrical specifications, in order to avoid working abnormally or damage.
- Avoid application display boards being touched by liquid, dirt and avoid being exposed to moisture during operation. This application should be kept in a dry environment, so as not to affect the function and performance.
- Remove the power supply when not using it.
- When following status occurred, please remove the power supply immediately, and contact our engineer.
  - Power Supply line is worn or damaged.
  - Power source (battery) connected but no any light on while operating.
  - Component off.



# 3. Software Installation Requirements

#### 3.1. Software Installation Requirements

Minimum system configuration required to run the burner application IDE & HexLoader:

- PC/NB hardware requirement:
   IBM PC compatible X86 system CPU
   512MB memory (1GB recommended)
   1GB Hard disk
- (2) Supported Products: 16F/17P/HY17M series products
- (3) Supported Hardware Model No.: HY10000-WK09 writer kit
- (4) Supported software version:
   Support 8bit OTP IDE's software version
   HYCON 8bit Writer V1.0.5(including) above
   HY16F Writer V3.9.2(including) above
- (5) Supported Operating system: Windows XP, Windows Vista, Windows 7, Windows 8, Windows 10
- (6) Apply the following interface modes:

## USB Port with "HID-compliant device"

The HY10000-WK09's USB Port driver uses the Windows standard

"HID-compliant device" (Figure 3-1), there is no need to install another USB driver.

Human Interface Devices
 Bluetooth Low Energy GATT compliant HID device
 HID-compliant consumer control device
 HID-compliant consumer control device
 HID-compliant consumer control device
 HID-compliant device

Figure 3-1



#### 3.2. Hardware online automatic update

HY10000-WK09 integrated writer supports 16F/17P/HY17M series products. Each time the internal firmware is converted, it is only applicable to one series of products. Before switching between different firmware, you can check the current firmware supported writer through the "information 1" message.

The integrated writer needs to cooperate with the download software, which can automatically convert the internal firmware of the burner to support the burning of different series of products. The usage methods are as follows:

#### 1. Automatically convert firmware with HYCON 8bit Writer

Connect the integrated writer to the computer via a USB cable, open software **WHYCON 8bit Writer**, the interface will be shown in Figure 3-2, click **"Chip Type"** and click **"Load"** load the corresponding HEX file, then click the **"Download to Burner"** button, the software will detect the firmware version of the burner, if it does not support the current chip, it will be automatically upgraded, as shown in Figure 3-3.

F	File																	
ľ	Chip T	vpe [	17P52	2M(4K)		-	E	Burner	Passwo	ord					Downl	oad to	Burner	1
	File Bin Chip Bin Burner Bin Config																	
	File Name D·\丁耳验证\2021-01 WK09惨录器\HY17P52 Main hex																	
Code Szie 0x1000 Checksum 0x9B3B IDE Version 1.20																		
		0	1	2	3	4	5	6	7	8	9	Α	В	С	D	F	F	
	0	7856	FFFF	FFFF	FFFF	66FD	D02B	FOFC	D010	FOFF	DOOF	FOFA	D012	FOFE	D011	FOFB	B026	
	10	780E	OCBB	C000	F4FF	3ABB	0628	6ABB	783C	B047	7FF8	C000	F4FF	90A7	8026	7826	B226	
	20	780E	OCBB	C000	F4FF	3ABB	0628	6ABB	7829	B247	7FF8	C000	F4FF	92A7	8226	7816	BA26	
	30	7810	8A26	D03C	FOAO	D03B	FOA1	D03A	FOA2	C000	F51C	D0D5	FOAO	D0D6	FOA1	D0D7	FOA2	
	40	90A6	BE27	7802	8E27	32BA	DOFB	F011	DOFE	F012	DOFA	FOOF	DOFF	F010	DOFC	F02B	64FD	
	50	0008	9CA7	8226	7FF1	9EA7	8026	7FEE	0A4A	0C47	000C	F080	0600	0C01	3429	7FFD	OCOF	
	60	9842	0682	6633	C000	F4D6	06C8	665B	06FC	665C	0A5D	0A5E	0601	6634	C000	F4FF	0600	
	70	663D	063E	663E	0600	663F	0610	6640	0610	6641	0690	6642	06C8	6644	OC2B	0C2C	0C1A	
	80	C000	F58A	0607	66A8	0600	66CF	0670	66D0	9E3D	903D	0C26	0C27	06A3	6623	0680	6624	
	90	060C	66BB	C000	F4F4	B047	7856	C000	F507	36BB	7FFA	9E23	8E23	8E3D	0C91	D091	F030	
	AO	902E	0655	6C31	7828	06AA	6C32	7825	0603	1230	902E	0655	6C31	7804	06AA	6C32	7801	
	BO	7FF6	0604	1A30	902E	D031	FOAD	D032	FOAE	902E	D031	FOB7	D032	FOB8	902E	D031	FOB9	
	CO	6432	0180	84A6	AE29	94A6	6432	010F	66A8	98A7	9E23	9E3D	780F	0600	66AD	0650	66AE	
	DO	064B	66B7	0603	6688	OCB9	0607	66A8	84A6	98A7	9E23	9E3D	BOA6	7FFE	80A6	DOAO	F0A3	
	EO	D0A1	FOA4	D0A2	F0A5	C8F2	D0A3	FOB4	DOA4	FOB5	D0A5	FOB6	7805	0C26	0C27	9E3D	9E23	
	FO	7A41	A0A7	781F	A2A7	7822	BOA6	7FFA	80A6	D0A0	F0A3	D0A1	FOA4	DOA2	F0A5	C8D8	AAA7	
	100	7809	C8AF	0602	6AF9	7802	3AF9	7FEA	OCF9	C8DE	7FE7	D0A3	F095	D0A4	F096	D0A5	F097	
	110	C8D3	7FDF	AEA7	787F	80A7	EAA7	7FDA	82A7	ACA7	7811	BOA6	7FFE	80A6	DOAO	F0A3	D0A1	
	120	FOA4	D0A2	F0A5	C8B3	D0A3	FOB4	DOA4	FOB5	D0A5	FOB6	7FC6	OC5B	0688	663D	0680	BOA6	Ŧ
																		*
																		Ŧ



Update Burner FW. Do not disconnect the link with burner!							
Updating Burner FW							
35%							
Updated burner FW successfully.							

Figure 3-3



#### 2. Automatically convert firmware with HY16F Writer

Connect the integrated writer to the computer via a USB cable, open the software HY16F Writer, as shown in Figure 3-4, select "Connect Burner Only" in the Connect drop-down box, and select the chip model in the pop-up selection dialog box. At this time, the software will detect the burner Firmware version, if the current chip is not supported, an upgrade dialog box will pop up, select "Yes (Y)" to automatically upgrade, as shown in Figure 3-5.

	Select an IC Type	
	IC Type List	HY16F198>>
	HY16F184 HY16F187 HY16F188 HY16F196 HY16F197 HY16F1978 HY16F1978 HY16F1978 HY16F1988 HY16F1983 HY16F3981 HY16F3910 HY16F3913	RAM Size: 8K APROM Size: 64K Part No 0016F198
Connection check		
Connect 💌 Flash Erase		
Connect Burner Only		OK Cancel
	"	



Burner will transform to HY16f Serial , Do you want to update?	To not decouport the link with human
是(Y) 否(N)	Updating Firmware

Figure 3-5



#### 3.3. Hardware online manual update

The integrated writer also supports online manual firmware conversion to support the burning of different series of products. Currently, only the manual conversion of HY16F firmware is supported. The usage methods are as follows:

Connect the integrated programmer to the computer via a USB cable. Then open the software <sup>HY16F Writer</sup>, click the "Function" button in the upper right corner of the software, and select "Update Firmware" in the drop-down box. And selecting the chip model, clicking "Update" will automatically upgrade, as shown in Figure 3-6.

Function 📃 🗙	Update Firmware
Unlock Flash Lock Flash	Support IC Type of Burner         FW Version           Support HY16F188,HY16F198,HY16F3981         4.5
Restore to UnSeal State Save Option Project Open Option Project	Support HY 16F391X 4.7     Load other Bin File
Download LCM String Update Firmware	0% Update Close

Figure 3-6



# 4. Writer Architecture

#### 4.1. Architecture Description

The integrated writer can perform programming and other functions through the PC connection (as shown in Figure 4-1). For details, please refer to the Development Tools-Hardware Manual (http://www.hycontek.com/).



WK09 Writer Kit Figure 4-1

#### 4.2. Appearance introduction

The integrated writer is a tool for programming chips; it is can be programmed 16F/17P/HY17M series products through the integrated writer, as shown in Figure 4-2.







# 4.3. Operating instructions

The following table shows the description of each device:

Item	Descriptions					
	USB Connector:					
J5	It is also a 5V power supply port that can be connected with the PC, and through					
USB	the USB port, the Hex & Bin code to be programmed can be downloaded through					
	USB port for HY16F/17P/HY17M series products.					
	Programming Control Port:					
	The port is connected to the chip's programming pins, and support 8-bit and 32-bit					
	(HY16F series) MCU product.					
	The programming pins are shown in Figure 4-3a.					
	<ul> <li>8-bit OTP MCU (HY17P) dedicated programming pin:</li> </ul>					
	VPP, PSCK, PSDI, PSDO, VDD, VSS					
	<ul> <li>8-bit MTP MCU (HY17M) dedicated programming pin</li> </ul>					
	VDD, ECK, EDIO, PCAL, NC, VSS					
	<ul> <li>32-bit Flash MCU (HY16F) dedicated programming pin</li> </ul>					
	RST, ECK, EDIO, NC, VDD, VSS					
	(3) Program Handler					
P1 Program						
riogram						
	Fissh Type OTT Type					
	Flash Type MTP Type OTP Type					
	riasi Type in Type on Type					
	1RST1VDD1VPP2ECK2ECK2PSCK					
	3 EDIO 3 EDIO 3 PSDI					
	4         PCAL         4         PCAL           5         VDD         5         N.C.         5         VDD					
	6 VSS 6 VSS 6 VSS					
	Figure 4-3a					
P2	Handler extension programming control port:					
Handler	Users can connect to the semi-automatic programming machine or connect					
	external buttons and indicators (refer to Figure 4-3b) to achieve extended					
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ltem	Descriptions						
	<complex-block><complex-block></complex-block></complex-block>						
CN2	TPS calibration extension port: Temperature Sensor module interface. CN2 is a dedicated TPS calibration port for 8-bit MCU, as shown in Figure 4-3f below. Its main function is for TPS calibration of the temperature sensor built into the chip. Users can connect an external temperature Sensor module board to CN2 to perform TPS calibration. The functions of each pin are as follows : Pin       Name       Descriptions         1       I2C_SCL       Temperature Sensor module board I2C communication clock pin 2         2       I2C_SDA       Temperature Sensor module board 3V3 power supply 4         VSS       Temperature Sensor module board ground						
	Figure 4-3t						
L1	Programming success message indicator. The OK(L1) pin outputs high level by default, and outputs low level when action occurs.						
	Action failure indicator (Error LED):						
L2	This message indicator will be on in case of programming failure, blank checking						
	failure and HAO frequency calibration failure.						

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ltem	Descriptions
	The Error(L2) pin outputs high level by default, and outputs low level when action
	occurs.
	Busy message indicator (Busy LED):
1.2	When the Writer is programming, this message indicator will be on.
LS	The Busy(L3) pin outputs high level by default, and outputs low level when action
	occurs.
	Program:
	Chip programming button.
51	The Program(S1) pin inputs a pull-up high level by default, and the action input is
	a low level.
	Blank Check:
60	Chip blank checking button(HY16F product has no this function).
52	The Blank(S2) pin inputs a pull-up high level by default, and the action input is a
	low level.
62	Information:
- 33	Information inquiry button of the Writer.

# 4.4. Description of Writer Characteristics

No	Item	Description
1	Model of Writer	HY10000-WK09
2	Supporting chip Model	HY16F/17P/HY17M Series
3	Display screen	TFT color display
4	Programing times counting	support
Б	Hardware calibration	support
5	function of chip frequency	support
6	Software calculation function	HAO and LPO (8-bit OTP MCLL only)
0	of chip frequency difference	
7	"Auto button" function	Blank(Erase), Program, Verify
Q	LED light display	Groop   ED(12) Rod   ED(13) Yollow   ED(14)
0	(L2 / L3 / L4)	Green LED(LZ); Red LED(L3); Tenow LED(L4)
9	Writer firmware update	Automatic updates
		HYCON 8bit Writer V1.0.5 (inclusive) or above
10		HY16F Writer V3.9.2 (inclusive) or above
	Programming software	It can be used with HY10000-WK09 burner to download
	support version	the compiled HEX code into the programmer, and then
		the programmer can perform online or offline
		programming to IC.



## Notice:

- 1. Supported chip model: HY10000-WK09 can program HY16F/17P/HY17M Series chips.
- 2. Program self-checking mechanism at startup: HY10000-WK09 is a high-level self checking mechanism at startup to ensure the correctness of data, when power on, it will check whether the code to be programmed is correct or not and Checksum is correct or not, therefore, the LCM screen will display "Verifying.... " string, If the check is passed, the "HYCON IDE" string will appear to ensure the correctness of the data, which means that the Writer can be started; if the check fails,

the **"Verify error 6"** string will appear, which means that the code to be programmed is not correct, and the code to be programmed must be downloaded again.

- 3. Allowed chip programming times: HY10000-WK09 supported.
- Auto button function: HY10000-WK09 automatic programming sequence is Blank(Erase) → Program → Verify.
- 5. LED lights: Green(L1)/Red(L2)/Yellow(L3) light of HY10000-WK09 respectively represents OK / Error / Busy. when the L3(Busy) message indicator is on during the programming process, the L3(Busy) message indicator is off after the programming is completed. When light L1 (OK) is on, it means that the programming is successful, and when light L2 (Error) is on, it means that the programming has failed or the HAO frequency calibration has failed.

# 4.5. Cautions

- 1. If the HY10000-WK09 Writer displays verify Failt at the first time of startup, it is caused by, the code to be programmed has not been downloaded to the flash of the Writer, not because the Writer is damaged, so the user does not need to pay attention to this error message.
- When HY10000-WK09 Writer use the "limit programming times" function, assuming that the programming times are used up, pressing the "Program" button will display
   Program Counter
   and cannot program, pressing the "Information" button will display
   "Information 2": program counter enable left 00000000".



# 5. Software HYCON 8bit Writer Download Operation description

In order to facilitate customers to use the writer WK09 of HYCON Technology, a dedicated download environment for 8bit Writer has been developed, which can download the compiled HEX file to the writer.

HYCON 8bit Writer is specially used for WK09, and can be downloaded to WK09 for programming of HY17P/17M series HEX.

## 5.1. Software window interface

The following interface will appear when opening the Hycon 8bit Writer software, as shown below.

Chip Type selection	File Chip 1	Type	17M28	_8M(8k	<)	•	E	Burner	Passwo	ord				C	Downlo	oad to	Burner	3	 5	Download program to writer button
			Ip Bin C:\Us 0x2	Burne ers\Us 2000	er Bin   er\Des	Config ktop\H Che	Y17M2 ecksum	8_IR_0	X62EC. 62EC	hex ]	10	E Versi	on [	1.1E	] [	b	bad	┣┤		Load program code button
	0 10 20 30 40	0 0000 7810 786F 0D98 6502	1 C201 6508 0011 0012	2 F0AA 04FE 0D98 6501	3 0000 7118 0012 0202	4 BC26 04FE 6500 0011	5 788A 7127 0201 6794	6 8C26 04FC 0011 0012	7 0C45 7133 679A 6501	8 882B 04F8 0012 01ED	9 0012 713F 6500 2429	A 5308 04F0 01FE 0011	B 6F08 7148 2429 6798	C 7802 04E0 0011 7853	D 0680 7157 6798 0011	E 6708 3108 7861 0098 ~503	F 4508 7363 0011 0012 0208	^		
Loader code display	50 60 70 80 90 A0	90         0011         Do not disconnect the link with burner         011         6794           00         012         Uddate Primare         047         2439           00         011         5%         011         1798           00         011         5%         011         1798           00         011         5%         011         3.463           00         04         262         2804         3.663           00         050         062         2804         3.663						 Automatically update status												
	80 C0 D0 E0 F0 100	06A0 0602 0602 6640 9E34 6C82	6630 665C 6646 8C6C 000A 780F	000A 000A 0601 0686 062A 882B	0606 0650 0012 6638 663C 5510	2E55 6634 6708 0C3D 06C0 6681	0646 0660 000A 0677 663D 5511	2E54 6678 0669 663E 0C3F 6680	9C57 000A 0011 06C0 8C40 9081	0606 0602 6797 663F 0684 C601	2E53 0011 918B 903B 663B F210	06CE 67A0 0000 8A26 000A 6480	2E5D 0BA1 C4C0 0604 C483 6711	06CC 0D9B 985F 6642 645C 2910	2E60 9C23 0602 0684 6682 3C29	0603 06C0 663C 6643 06C0 7815	2E5E 6644 0698 000A 2A82 0D0F			
message display	110 120	7703	910D	7801 burner	930D succe	C4FD	0680	662E	0682	662E	062C	660D	0601	CB82	0698	6640	0602	< >		

# 5.2. Program download method

Step 01: Connect WK09 to the computer via USB and open MHYCON 8bit Writer the

software.

**Step 02:** Select the IC model in Chip Type.

**Step 03:** Click "Load" to select HEX. Note that HEX must be consistent with the selected IC model, otherwise HEX will fail to load;

**Step 04:** Click "Download to Burner" to start downloading; if the current version is not supported, the WK09 firmware will be automatically upgraded; if the download fails after upgrading the firmware, click "Download to Burner" again;

**Step 05:** Check whether the download is successful on the message display. The download is complete when it is successful.



# 5.3. Function settings

The Config page of the Hycon 8bit Writer software is the function configuration area. The interface is as shown below

	File
	Chip Type     17M28_8M(8K)     Burner Password     Download to Burner       File Bin     Chip Bin     Burner Bin     Config
HEX message area	Chip Config OSC Calibration HAO Calibration Enable HAO Calibratio: HAO Frequency Hz : % (RANGE 8530000 ~ 8970000 Hz) Hz : % (RANGE 12500 ~ 15300 Hz, Err≧ 5%)
	TPS Calibration  Enable TPS Calibratio:  Temperature  Read  Stack over reset  Program Protect  User Key(Hex)
Function configuration area	Burner Setting          Burner Setting       Chip Code Number Functic       Read from Burner         Buzzer On Function       Start Number       Write to Burner         Chip is Programmed Check Funct:       Program Times       Write to Burner         BIE Checksum Function       Start Number       Start Number

**The HEX message area** displays the relevant configurations in HEX after loading HEX, as described in the following table:

No.	Item	Description
		After loading the HEX file, HAO information is displayed;
1	HAO Calibration block	If it is selectable, it means you can cancel or add HAO settings here. Click "Download to Burner" to download and take effect;
2 l		After loading the HEX file, LPO information is displayed;
	LPO Calibration block	If it is selectable, it means you can cancel or add LPO settings here. Click "Download to Burner" to download and take effect;
3	TPS Calibration block	After loading the HEX file, the TPS temperature correction information is displayed and cannot be modified;
4	Stack over reset	After loading the HEX file, Stack overflow information is displayed and cannot be modified;
5	Program Protect	After loading the HEX file, it displays whether it is write-protected and cannot be modified;
6	User Key(Hex)	After loading the HEX file, the user password is displayed and cannot be modified;



The **function configuration area** is related to the settings of the auxiliary functions of the writer, as described in the following table:

No.	ltem	Description
1	Blank Check Function	Blank check function, check it to indicate blank check
2	Buzzer On Function	Buzzer function, check it to turn on the buzzer
3	Chip is Programmed Check Function	checksum check function, <b>note: if there is no need for</b> this, it is recommended not to check it
4	BIE Checksum Function	Checksum is written to the BIE function, and checking it means turning on this function; If turned on, the Checksum value is written to the chip BIE area address "0x3F"
5	Chip Code Number Function	Chip Code function, write decimal number, check to turn on this function; If turned on, the Chip Code value is written to the chip BIE area address "0x3D/3E", the low bit is "0x3D", and the high bit is "0x3E"
6	Program Times	Number of burning times, write in decimal number, check to turn on this function
7	Read from Burner	Read the function settings of the writer
8	Writer from Burner	Write function settings to the writer

Note: For relevant settings in the **function configuration area**, click "Download to Burner" on the homepage File Bin page to download and take effect; you can also modify the function on the Config page after downloading and click "Writer to Burner" to take effect.



# 6. Software HY16F Writer download operation instructions

In order to facilitate customers to use the writer of HYCON Technology, a dedicated download environment for HY16F Writer has been developed. The compiled BIN file of the HY16F series chip can be downloaded to the writer.

#### 6.1. Software Window interface

When opening the HY16F Writer software, the following interface will appear, as shown below.

HYCON HY16F Serial	Арр Ві	Data Bin	App in Chip	Data in Chip	App in Burner	Data in Burner	Clock Calibrate	Function	n EX
Connection check	♪ D:\工具验证\	2021-01 WK09烧录	大器\G-39100452	_EA-19(V01.00	0.01.00) .bin	Load	File size: 95448 By	es Checksum:	0x2DED
Disconnect + Flash Erase Connected									
Part No. 016F3913 RAM: 8 K Bytes APROM: 128 K Bytes	00000 48 00 00 7 00020 3A FF BF B 00040 3A FF BF B	5 40 00 00 09 40 00 0 C 3A OF A8 3C 49 00 6 C 3A OF A8 3C 49 00 6 C 3A OF A8 3C 49 00 6	00 09 40 00 00 09 52 0E D5 5A 92 00 51 96 D5 4A 92 00	3A FF BF BC 3A ( 3A 1F AB BC 49 ( 3A FF BF BC 3A ( 3A FF BF BC 3A (	DF A8 3C 49 00 6 D0 00 8E 3A 1F A DF A8 3C 49 00 6	2 1B D5 62 92 00 B 84 64 00 00 04 1 94 D5 42 92 00	) Hv@@. 1 :: <i.i ) ::<i.a< td=""><td>· @ : :</td><td>&lt;1.b.b.a.</td></i.a<></i.i 	· @ : :	<1.b.b.a.
F/W Ver: WK09 4.9 HY391X Serial Software Ver 4.0.6	00080 3A FF BF B 00080 3A FF BF B 000A0 3A FF BF B	C 3A OF A8 3C 49 00 6 C 3A OF A8 3C 49 00 6 C 3A OF A8 3C 49 00 0	51 93 D5 2A 92 00 51 93 D5 2A 92 00 10 54 D5 1A 92 00	3A FF BF BC 3A ( 3A FF BF BC 3A (	DF A8 3C 49 00 6 DF A8 3C 49 00 6 DF A8 3C 49 00 6	1 9C D5 22 92 00 1 9C D5 22 92 00 1 8D D5 12 92 00	) ::	*	<1.a
Encrypt & Decrypt     O Encrypt with password	000C0 3A FF BF B 000E0 3A 0F A8 0	C 3A OF A8 3C 49 00 6 I 3A FF BF 84 64 00 0	61 89 D5 0A 92 00 10 04 47 D0 00 40	3A FF BF BC 3A ( 59 de 80 00 45 f	DF A8 3C 49 00 6 F0 20 00 64 02 0	i1 8C D5 02 92 00 10 02 44 18 FF E1	) ::< .a	. G @Y E	<l.a dD</l.a 
Password 0x FFFFFFF C Encrypt without password	00100 44 27 00 0 00120 44 10 00 4 00140 4C 01 FF F	8 FE 0E FE 17 64 02 0 1 44 30 02 94 4C 30 8 C 44 04 03 00 44 10 F	00 03 84 01 64 04 30 0e 46 00 00 A7 =F 01 B6 20 DD9e	E0 03 49 00 00 0 58 00 02 84 8A 0 D5 00 92 00 3B f	D7 49 00 9A 83 E 61 88 60 08 20 0 FF FC BC 3A 6F A	05 00 40 00 00 09 10 01 18 20 80 01 18 3C EF E8 40 41	9 D'd 1 D@D0L0. ) LDD	dll. .FXa.` ;	· · · · · @ · · ` · · · · · · @
Target Chip Burner Program Read Area	00160 D0 09 40 3 00180 07 FE 4E F 00140 E4 05 E3 0	) AC 08 40 A0 54 09 4 ? 00 F6 F0 81 F1 82 F ! F2 03 F1 02 F0 01 F	10 31 A8 04 40 20 F2 83 F3 84 F4 85 54 A2 00 01 4F A2	2C 08 46 A8 00 0 80 02 80 23 80 4	DO 40 31 A8 04 5 44 49 00 01 CF 8 A1 EC 08 40 21 2	0 A2 7F FF 5C F 0 E2 80 C1 80 A 9 04 92 61 3A 0	б@)@,Т.( )N	91(9),.F(9) #.DI.	IP\.
Program Count     Dec	001C0 94 3C 80 0 001E0 3A 2F 94 3	6 84 20 80 45 84 60 4 6 80 06 84 20 80 46 8	19 00 04 25 81 01 34 60 49 00 04 14	81 20 3A OF 94 ( 3A 2F 94 04 89 (	D4 81 E9 89 29 E D0 3A 2F 94 3C 8	3 2F 89 08 89 01 0 05 84 20 80 4	= . <e.`i< td=""><td>···*. `1:/:/</td><td>]./E</td></e.`i<>	···*. `1:/:/	]./E
Chip Code Dec	00200 84 60 49 0 00220 4E A2 00 8 00240 40 F7 A4 0	) 04 09 3A 2F 94 04 8 ) E5 00 E9 4A 81 E5 9 ) 8B 0F 81 F1 94 4D 4	31 E1 80 20 80 OF 3F 69 40 F7 94 06 40 F7 84 06 F8 0F	89 20 E3 20 89 0 8A CF 81 E1 9E 4 81 F9 8B 26 40 F	DF 8B 02 40 A4 2 49 40 F7 84 06 E F7 A4 06 F8 04 8	4 04 40 A5 04 04 8 05 81 E9 8F 21 E 21 48 00 00 00	1 .`I:/ I NJ ∵ @ MI		.@s.@  !  н
App Bir App Writing Address Begin: 0 Hex	00260 81 E9 8F 2 00280 81 E9 8B 2	40 F7 A4 06 48 00 0 40 F7 A4 06 E8 04 8	)0 06 81 E9 8B 26 3F 21 48 00 00 0C	40 F7 A4 06 8B ( 81 E9 8F 21 40 F	DF 81 E1 9A 4D 4 F7 A4 06 48 00 0	IO F7 84 06 E8 01 IO 66 81 E9 8B 20	се.ен. се.ее.е.е.е.е.е.е.е.е.е.е.е.е.е	8@ !H!@	м@ н8
Data Bin	002A0 40 F7 A4 0 002C0 E8 03 88 C 002E0 48 00 00 0	5 88 0F E5 00 E9 49 4 F E2 CF E9 35 98 4D E 1 89 26 E3 26 89 0F 9	10 A4 24 04 40 A5 E2 25 E8 0C 89 26 38 4D E2 25 E8 0C	04 04 4E A3 FF E E3 26 E8 04 8D 2 89 26 E3 26 E8 0	BB 48 00 00 42 8 21 48 00 00 09 8 D4 8D 21 48 00 0	IS E1 88 AF E2 AI IS E1 89 2F E3 2I IO 09 85 E1 89 2I	<sup>=</sup> @I( <sup>=</sup> 5.M. <sup>=</sup> H&.&	ĝ \$.@NH. %&.&!H. M.%&.&!	B <i>I . I</i> . H <i>I</i>
Erase Al Read Burn	00300 E3 2F 48 0 00320 E5 00 E9 C 00340 E2 AF E8 0	0 00 04 89 26 E3 26 8 C 40 A4 24 04 40 A5 0 8 88 CF E2 CF 88 EF 4	39 OF 81 E1 9E 49 )4 04 4E A2 00 07 10 02 AC 09 40 A3	40 F7 84 06 E8 0 81 E5 9F 69 40 F 54 08 40 00 28 0	D5 81 E9 8F 21 4 F7 94 06 8A CF 4 D4 94 71 92 2C 4	IO F7 A4 06 8B 01 I4 F0 04 00 88 A1 I0 A3 D0 08 40 11	= ./H&.&. =@\\$.@. )	I@ .Ni@ a)@T.@(	!@ D g.,@@
	00360 A8 04 EC 1 00380 FF F2 CC 2	3A 6F A8 04 3B FF F A 81 E2 98 92 E2 4F 9	FC 84 DD9E E4 20 38 DB88 6F 40 A1	E8 09 40 A0 84 0 88 04 4E A2 00 2	08 40 A5 00 04 4 2F CB 09 CA 04 8	IE A3 00 36 48 FI	=: 0; 3*0.	@@ o@N/	)N6H.
۱۱۱ (III) (IIII) (III)	003C0 00 20 40 9 003C0 00 20 40 9 003E0 00 04 48 F	I FB 10 8A 88 3A 0F 9 24 0D 40 21 20 0C 4 FFF C0 44 18 00 00 8	34 3C 80 03 49 00 40 31 a0 0C 40 31 34 00 48 FF FF BE	09 8F 81 00 3A 0 A4 04 48 FF FE 0 84 00 80 20 48 F	u⊢94 ∪4 4E 82 0 DA 40 A1 84 08 4 FF FF B7 3A 6F 9	IU UD 8A 88 52 94 IO A5 08 04 4E A3 IC BC 46 58 00 00	ч. b.@): 3@(\$.@)( )НD	<г	. N R. ) @ N. . : o FX
					0%				·····

#### 6.2. Program download method

**Step 01:** Connect WK09 to the computer via USB and open <sup>HV16FWriter</sup> the software.

**Step 02:** Click "Connect" to connect or select the chip model from the drop-down box; if the current version is not supported, the WK09 firmware will be automatically upgraded.

**Step 03:** Select Bruner and download the BIN file to the writer.

**Step 04:** Click "Load" to load the BIN file, check App Bin, and other required functions. **Step 05:** Click "Burn" to start downloading;

**Step 06:** Check the download progress in the action status display bar. If the download is

successful, it is completed.

**Note:** If the firmware of WK09 is HY17P/17M, to convert to HY16F firmware, you can only use manual upgrade method; please refer to Chapter 3.3



**6.3. HY16F Writer function setting** Open the HY16F Writer software and select the function interface as shown below

Encrypt & Decrypt									
I O Encrypt with password									
Password 0x FFFFFFF									
Encrypt without password									
Target Ohip OBurner 2									
Program Read Area									
3 Program Count Dec									
4 Chip Code Dec									
5 ISP Resource Setting Hex									
6 App Bin App Writing Address Begin: 0 Hex									
_ Data Bin									
Data Writing Address Begin: F000 Hex									
C Erase Al Read Burn									

Relevant instructions are as follows:

No.	ltem	Description
1	Encrypt & Decrypt	Encrypt with password: If the written value is FFFFFFF, it means no encryption; if it is other values, it means encryption;
	DIUCK	Encrypt without password : Encryption without password
2	Target	Select the operation target. Chip operates the connected chip online, and Burner operates the burner.
3	Program Count	Set limit of burning times
4	Chip Code	Rolling code writing function
5	ISP Resource Setting	ISP function settings, define ISP UART Pin & ISP Check Pin
6	App Bin	Required, download the App Bin to the target
7	Data Bin	Download Data Bin to target
8	Erase All	If checked, it means that all chip Flash will be cleared before burning. Unchecked means that only the Flash block to be burned in the chip will be cleared.



# 7. Offline (PC) burning instructions

# 7.1. Burning instructions

When the user program enters the mass production stage from the development stage, the mass production is burned offline. At this time, the burner can be used alone without connecting to the PC.



(Please refer to Chapter 4.3 for description of each device)

The following table describes the functions of the LED indicators and buttons:

Name	Function
J2	USB connector, connect 5V power supply via USB
P1	Program programming socket, connect the chip to be programmed
14	Green light, power-on indicator light signal.
	Programming success message indicator light signal.
L2	Red light, Blank Check Fail message indicator signal.
	Programming failure message indicator signal.
	HAO frequency calibration failure indicator signal.
L3	Yellow light, Busy message indicator light signal
S1	Program $\rightarrow$ Verify ; chip programming button.
S2	Blank Check ; Chip blank check button.
S2	Information ; Writer information check button.

- For offline operation, you need to first download the programming code (HEX or BIN file) into the Flash Memory of the writer. Please refer to the programming software instruction manual of each product.
- During offline programming, first press button S2 (Blank) to check whether the chip is empty. After checking, the L1 (OK) green LED should light up.
- Button S1 (Program) is the burning button, and the steps are Program → Verify.
   At this time, the L3 (Busy) message indicator light is on. If you have checked



"Burning Protection" in the "Assembly Options" before downloading to Flash Memory, Then the burning protection will be performed after Verify; if it is not checked, it will stop after Verify. After the burning is completed, **L3** (Busy) will be off, and the **L1** (OK) green LED will be on.

- After the programming is completed, you can press button **S2** (Blank) to check again whether the chip is empty. At this time, the **L2** (Error) red LED should light up, indicating that the programming is completed (because the programming code has been burned into the IC, so Blank Check Fail ).
- It is recommended to press S2 (Blank) to check if the chip is empty before burning, and then press S1 (Program) to perform the burning operation to ensure correct burning.
- If there is any error or failure during execution, the L2 (Error) red LED will light up; if successful, the L1 (OK) green LED will light up.



# 8. Display message description

#### 8.1. HY17P/17M message description

After HYCON 8-bit Writer downloads HY17P/17M HEX to WK09, you can view relevant information through the S3 Information button.

• Page 1, the power-on homepage of the display screen is as shown below, which displays the chip model currently to be burned, Checksum value, number of burns, whether to write protected, and the results of the power-on check program.



 Page 2, Device Info, displays the writer information, firmware version and serial number.



 Page 3, Chip Info, displays the chip information connected to WK09. Chip ID: Read the chip ID code; Checksum: Read the chip Checksum value; Protected: Whether the chip is write-protected; If the chip is not connected, there is no value.





 Page 4, Program Info 1, current HEX related information, Product name: chip model; Chip ID: chip ID code; Checksum: Checksum value of HEX.



 Page 5, Program Info 2, Program count: the number of programming times; Chip code: rolling code value, a value indicates that the Chip code function is turned on; Chip Protected: whether write protection is turned on.



 Page 6, Program Info 3, BIE checksum: Checksum to write to BIE whether the function is turned on; TPS Calibration: whether TPS temperature correction is turned on; Temperature: read the measured temperature of the temperature correction PCB.





Page 7, Program Info 4, VDD: Read the VDD voltage of WK09; VPP: Read the VPP voltage of WK09.



• Page 8, Program Info 5, HAO calibration: whether the HAO frequency correction function is turned on, and the correction value; LPO calibration: whether the LPO frequency correction function is turned on, and the correction value.



• Page 9, Config Info, Blank: whether the blank check function is turned on; Buzzer: whether the buzzer function is turned on; Had Programmed: whether the checksum check function is turned on; For details, please see Chapter 5.3.





#### 8.2. HY16F message description

After HY16FWriter downloads the HY16F BIN file to WK09, you can view relevant information through the S3 Information button.

• The home page of the power-on display is as shown below, showing the current writer firmware version.



• Information 1 is as shown below, showing the currently supported chips.



• Information 2 is as shown below, showing the remaining number of burning times.





 Information 3 is as shown below, showing that Chip ID From Flash indicates the chip model selected when downloading HY16F Writer; Chip ID From IC indicates the model of the chip currently connected to WK09, if the chip is not connected, it is FFFFFFF; and the status of the chip.



• Information 4 is as shown below, showing the Chip Code value.



• Information 5 is as shown below, showing the ISP value.





 Information 6 is as shown below, showing the burning steps, P means Program, V means Verify, and E means encryption (with password encryption).



 Information 7 is as shown below. App Bin Name represents the name of the downloaded App Bin; Size represents the size of the App Bin; CheckSum represents the CheckSum value of the App Bin; Write Add Begin represents the starting address of the App Bin.





 Information 8 is as shown below. Data Bin Name represents the name of the downloaded Data Bin; Size represents the size of the Data Bin; CheckSum represents the CheckSum value of the Data Bin; Write Add Begin represents the starting address of the Data Bin.



• Information 9 is shown in the figure below. Cal HAO represents the frequency correction target value; HAO Real represents the corrected frequency value.





# 9. Revisions

The following describes the major changes made to the document, excluding the font and punctuation changes.

Version	Page	Date	Revision Summary
V01	All	2022/10/5	First edition
V02	All	2024/05/21	Updated WK09 pictures and related instructions; Added Chapter 5 software HYCON 8-bit Writer download operation instructions, Chapter 6 HY16F Writer download operation instructions, Chapter 8 display message instructions.